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From: Carmine Vasile
Sent: Sun 2/26/2017 3:46:08 PM
Subject: Correction to 2017 PAG Manual
[Model-Fraud.pdf](#)
[233-DRLs.pdf](#)
[Objection-12 13 16.pdf](#)

EPA Administrator Sco-tt Pruitt & Samuel Hernandez -(hernandez.samuel@epa.-gov)-
 U.S. Environmental Pr-otection Agency
 1200 Pennsylvania Ave-nue NW.-
 Washington, DC 20460-
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CORRECTION TO:- 2017 PAG M-anual: Protective Act-ion Guide (PAG) for D-rinking Water
 After a- Radiological Inciden-t
 [EPA-HQ-OAR-2007-0268-; FRL-9958-50 OW] [See pages 6498-6-500, Federal Register-/Vol.
 82, No. 12/Thur-sday, January 19, 201-7/Notices]

Dear Administrator Pr-uit: I called the Di-rector of the Federal- Register to report s-erious errors
 in equa-tions appearing on pa-ges 63, 64 & 65 of th-e 2017 PAG Manual (EP-A-400/R-17/001)
 @ https://www.epa.gov/s-ites/production/files-/2017-01/documents/ep-a_pag_manual_final_re-visions_01-11-2017_co-ver_disclaimer_8.pdf. I was
 told they are- not responsible for -making corrections an-d to report errors to- the EPA
 Administrato-r; c/o the contact pe-rson (Samual Hernande-z) listed in the Fede-ral Register
 Notice @- <https://www.gpo.gov/f-dsys/pkg/FR-2017-01-1-9/pdf/2017-01230.pdf>.-

Accordingly, please s-ee to it that the fol-lowing corrections ar-e made:

(A)- -Pursuant to -40 CFR 141.66 (-Maximum contaminant l-evels for radionuclid-es)-1-,
 c-orrect the erroneous -equation on page 64 f-or the Derived Defaul-t Response Level (DRL)-
 for Iodine-131 by:-

Changing:- $DRL = 5.00 \text{ mrem} / (1.643 \text{ L/da-y} * 365 \text{ days} * 8.05 \text{ E--05 mrem/pCi}) =$
 $10, -352 \text{ pCi/L} \quad - \quad (1)$

To: - $DRL = 500 \text{ mrem} / (2.0-00 \text{ L/day} * 365 \text{ days} *- 1.85 \text{ E-03 mrem/pCi}) - =$
 $375 \text{ pCi/L} \quad - \quad - \quad (2)$

- This -change makes the Emer-gency-PAG = -125- times the non-emerge-ncy MCL of
 4 mrem/yr -for I-131 pursuant to- 40 CFR 141.66(d)(1)(-2). [1]

After- an emergency has pas-sed, equation (2) yie-lds the non-emergency- MCL for I-
 131 of 3 p-Ci/L, e.g.:

- $DRL = 4 \text{ mrem} / (2.000- \text{ L/day} * 365 \text{ days} * 1-.85 \text{ E-03 mrem/pCi}) =- 3$
 $\text{pCi/L} \quad - \quad (3)$

Multiple Radionuclide-s:

(B)- Pursuant to 40 CFR 141.66(d)(1)(2-), when multiple radionuclide-s are present in drinking water, please correct the erroneous equations on page 65 b-y:

Changing-:
$$F = (900 \text{ pCi/L} / 1,000 \text{ pCi/L}) + (4,500 \text{ pCi/L} / 6,200 \text{ pCi/L}) = 1.63 \text{ and}$$
$$F = (900 \text{ pCi/L} / 7,400 \text{ pCi/L}) + (4,500 \text{ pCi/L} / 17,000 \text{ pCi/L}) =$$
$$0.38$$

To:
$$F = (900 \text{ pCi/L} / 8 \text{ pCi/L}) + (900 \text{ pCi/L} / 60 \text{ pCi/L}) + (4,500 \text{ pCi/L} / 200 \text{ pCi/L}) = 112.5 + 15 + 22.5 = 150$$

NOTE-S: (a) As indicated in the attached "Objection.pdf" sent to your predecessor, the F-value predicted by Equation (6) must be increased by 4,500 divided by the MCL of Ba-137m, which is missing from the spread sheet in attached "233-DRLs.pdf". (b) According to the Nucleonica analyses in my Objection, the dose-contribution from the only radioactive decay product of I-131 (Xenon-131m) is negligible.

Grossly Inflated DRLs & Fraudulent Computer Models

Please ask the EPA's Inspector General to investigate the author[s] of the April 30, 2015 Memo in the attached "Model-Fraud.pdf"; entitled "Discussion of Drinking Water PAGs Based on Doses to Critical Organs as Opposed to Effective Whole Body Dose Commitment", by SC&A and The Cadmus Group because its assumptions are not consistent with 40 CFR 141.66 and "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure," NBS (National Bureau of Standards) Handbook 69 as amended August 1963, U.S. Department of Commerce.

Please also correct the erroneous DRLs listed in the attached "233-DRLs.pdf", and include missing DRLs & MCLs for the 8 decay products of Radium-226 (Rn-222, Po-218, Pb-214, Bi-214, Po-214, Pb-210, Bi-210 & Po-210). Without this information it will be impossible for FEMP managers to develop an effective emergency plan, as illustrated by the following example:-

Section 2.1 I-131 of the PAG Manual correctly states: "As can be seen in Appendix A, the limiting adult dose conversion factor for I-131 is 4.32×10^{-7} Sv/Bq for the thyroid, and the limiting adult risk coefficient is 4.39×10^{-10} risk/Bq for thyroid cancer."

Therefore, if an adult woman drinks 2 liters of water contaminated by 3 pCi/L of I-131 every 24 hours, she will be ingesting about 215,000 I-131 atoms each day. The Bateman Equation analysis like that in my Objection indicates about 91.8% (211,000 I-131 atoms) will remain after 24 hours, when another 215,000 atoms are ingested for a total of 426,000, and so on. Each day the number of I-131 atoms grows until a steady state value is reached. Thereafter, her thyroid will be receiving a constant radiation dose from over a million I-131 atoms, as well as hundreds of thousand Xenon-131m atoms that are not stored in her thyroid.

According to organ-based computer models, her thyroid will be receiving an annual dose of $0.04 \text{ J/kg} = 4 \text{ mrem} = 0.04 \text{ Sv}$. If her thyroid weighs about 20 grams (0.02 kg), and she weighs

about 60 kg- (132 pounds), her thyroid will be receiving an annual dose of $0.04 \text{ J/kg} \times .02 \text{ kg} = 8 \times 10^{-4} \text{ J}$, but her whole body will be receiving much less atomic energy; about $= 1.3 \times 10^{-5} \text{ J/kg} = 1.33 \times 10^{-5} \text{ Sv} = 1.33 \times 10^{-3} \text{ mrem}$.

Therefore, her thyroid dose will be about $4/1.33 \times 10^{-3} = 3,008$ times her whole body dose -- NOT 98 times as erroneously concluded in the following example- from the aforementioned Memorandum by SC&-A, et. al:

“The organ specific PA-G for thyroid cancer -associated with the ingestion of I-131 in -water would be derived as follows:

Thyroid -Cancer: $4.39 \times 10^{-10} \text{ risk/Bq} \div 4.32 \times 10^{-7} \text{ Sv/Bq} = 1.02 \times 10^{-3} \text{ risk per Sv}$ -

The dose to the thyroid gland that would result in a lifetime risk of cancer of 5×10^{-4} is as follows:

Thyroid -Cancer: $5 \times 10^{-4} \text{ risk} \div 1.02 \times 10^{-3} \text{ risk/Sv} = 0.49 \text{ Sv}$ or 49,000 mrem

Hence, if one were interested in establishing an I-131 PAG based on critical organ, -with the same lifetime risk of cancer to that organ as an effective whole body dose of

500 mrem, the PAG -would be 49,000 mrem -to the thyroid; i.e., - 98 times higher than- the whole body dose.”-

Prohibit Use of EPA Method 900

Additionally, suppliers of public and bottled water must be prohibited before, during, and after a nuclear accident from using- EPA Method 900 to measure Gross Alpha activity pursuant to 40 CFR 141.66 (c). As- indicated in the attached “Objection.pdf”, my corrupt water company uses EPA Method 900 to falsify both- Gross Alpha & Gross -Beta test results. Therefore, measurements based on EPA Method 900 must be prohibited

CONCLUSION: -As you know, this matter is extremely urgent because FEMA plans to begin using the 2107 PAG Manual during their evaluation of offsite response organizations around nuclear power facilities 12 months after it was published-, as noted in the January -10, 2017 Federal Register (pg. 6500) by Joel Beauvais, Deputy Assistant Administrator, Office of Water. Safe emergency management plans cannot- be made using erroneous equations on pages 63 & 64 or fraudulent computer models crafted to violate key -sections of 40 CFR 141.66. [1]-

Yours truly,-

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Reference [1]- § 141.66 Maximum contaminant levels for radionuclides. [From <https://www.law.cornell.edu/cfr/text/40/141.66>]-

(a) [Reserved]-

(b) MCL for combined -radium-226 and -228. -The maximum contaminant level for combined- radium-226 and radium-228 is 5 pCi/L. The- combined radium-226 -and radium-228 value -is determined by the -addition of the results of the analysis for radium-226 and the -analysis for radium-228.

(c) MCL for gross alpha particle activity (excluding radon and uranium). The maximum-contaminant level for gross alpha particle activity (including radium-226 but excluding radon and uranium) is 15 pCi/L.

(d) MCL for beta particle and photon radioactivity.

(1) The average annual concentration of beta particle and photon radioactivity from man-made radionuclides in drinking water must not produce an annual dose equivalent to the total body or any internal organ greater than 4 millirem/year (mrem/year).

(2) Except for the radionuclides listed in table A, the concentration of man-made radionuclides causing 4 mrem total body or organ dose equivalents must be calculated on the basis of 2 liter per day drinking water intake using the 168 hour data list in "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure," NBS (National Bureau of Standards) Handbook 69 as amended August 1963, U.S. Department of Commerce. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 16 CFR part 51. Copies of this document are available from the National Technical Information Service, NTIS ADA 280 282, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161. The toll-free number is 800-553-6847. Copies may be inspected at EPA's Drinking Water Docket, 401 M Street, SW., Washington, DC 20460; or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to:

http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html. If two or more radionuclides are present, the sum of their annual dose equivalent to the total body or to any organ shall not exceed 4 mrem/year.

Table A - Average Annual Concentrations Assumed To Produce: a Total Body or Organ Dose of 4 mrem/yr

1. Radionuclide Critical organ pCi per liter
2. Tritium Total body- 20,000
3. Strontium-90 Bone Marrow 8

(e) MCL for uranium. The maximum contaminant level for uranium is 30 µg/L.

Reference [2]: Definitions from Appendix B & pg. 64; 2017- PAG Manual EPA-400/R-17/001 -

(1) Protective Action Guide (PAG): The projected dose to an individual, resulting from a radiological incident at which a specific protective action to reduce or avoid that dose is warranted.

(2) Derived Response Level (DRL): A level of radioactivity in an environmental medium that would be expected to produce a dose equal to its corresponding Protective Action Guide.

(3) Maximum Contaminant Level (MCL): An enforceable standard established to protect the public against consumption of drinking water contaminants that present a risk to human health. A MCL is the maximum allowable amount of a contaminant in drinking water that is delivered to the consumer.

(4) Effective dose: The sum of organ equivalent doses weighted by ICRP organ weighting factors.

(5) DCFia: The dose conversion factor (also referred to as dose coefficient) for the ingestion of radionuclide i in drinking water and age group a (in mrem/pCi or Sv/pCi, or mrem/Bq or Sv/Bq). See below for guidance on dose conversion factors (DCFs).

(6) Sievert (Sv): -International unit of- equivalent dose. One- sievert equals = 100- rem [=1 Joule/kg].

(7) Effective dose: -The sum of organ equivalent doses weighted- by ICRP organ weighting factors.

Dose: -The amount of radiation exposure a person -has received, calculated considering the effectiveness of the radiation type (alpha,- beta, gamma), the timeframe of the exposure, and the sensitivity of the person or individual organs.

(8) Committed effective dose: The sum of the committed equivalent doses -following intake (inhalation or ingestion)- of a radionuclide to- each organ multiplied by a tissue weighting factor.

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